

Instructor's Solutions Manual
to accompany

INTRODUCTORY CIRCUIT ANALYSIS

Tenth Edition

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10 9 8 7 6 5 4 3 2 1



ISBN 0-13-048665-5

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CHAPTER 1 (Odd)

5. $12 \cancel{\text{mi}} \left[\frac{15 \cancel{\text{min}}}{\cancel{\text{mi}}} \right] \left[\frac{1 \text{ h}}{60 \cancel{\text{min}}} \right] = 3 \text{ h}$

7. CGS

9. MKS, CGS: $^{\circ}\text{C} = \frac{5}{9}(^{\circ}\text{F} - 32) = \frac{5}{9}(68 - 32) = \frac{5}{9}(36) = 20^{\circ}$
 K: $\text{K} = 273.15 + ^{\circ}\text{C} = 273.15 + 20 = 293.15$

11. $0.5 \cancel{\text{yd}} \left[\frac{3 \cancel{\text{ft}}}{1 \cancel{\text{yd}}} \right] \left[\frac{12 \cancel{\text{in}}}{1 \cancel{\text{ft}}} \right] \left[\frac{2.54 \text{ cm}}{1 \cancel{\text{in}}} \right] = 45.72 \text{ cm}$

13. a. 15×10^3 b. 30×10^{-3} c. 7.4×10^6
 d. 6.8×10^{-6} e. 402×10^{-6} f. 200×10^{-12}

15. a. $(10^2)(10^2) = 10^4$ b. $(10^{-2})(10^3) = 10$ c. 10^9
 d. $(10^3)(10^{-5}) = 10^{-2}$ e. $(10^{-6})(10 \times 10^6) = 10$ f. $(10^4)(10^{-8})(10^{35}) = 10^{31}$

17. a. $\frac{10^2}{10^3} = 10^{-1}$ b. $\frac{10^{-2}}{10^2} = 10^{-4}$ c. $\frac{10^4}{10^{-5}} = 10^9$
 d. $\frac{10^{-7}}{10^2} = 10^{-9}$ e. $\frac{10^{38}}{10^{-4}} = 10^{42}$ f. $\frac{(10^2)^{1/2}}{10^{-2}} = \frac{10^1}{10^{-2}} = 10^3$

19. a. $(10^2)^3 = 10^6$ b. $(10^{-4})^{1/2} = 10^{-2}$
 c. $(10^4)^8 = 10^{32}$ d. $(10^{-7})^9 = 10^{-63}$

21. a. $(-10^{-3})^2 = 10^{-6}$ b. $\frac{(10^2)(10^{-4})}{10} = \frac{10^{-2}}{10} = 10^{-3}$

c. $\frac{(10^{-3})^2(10^2)}{10^4} = \frac{(10^{-6})(10^2)}{10^4} = \frac{10^{-4}}{10^4} = 10^{-8}$ d. $\frac{(10^2)(10^4)}{10^{-3}} = \frac{10^6}{10^{-3}} = 10^9$

e. $\frac{(10^{-4})^3(10^2)}{10^6} = \frac{(10^{-12})(10^2)}{10^6} = \frac{10^{-10}}{10^6} = 10^{-16}$

f. $\frac{[(10^2)(10^{-2})]^{-3}}{[(10^2)^2][10^{-3}]} = \frac{1}{(10^4)(10^{-3})} = \frac{1}{10} = 10^{-1}$

$$23. \quad \text{a.} \quad 6 \times 10^3 = \underset{-3}{\overbrace{0.006}^{+3}} \times 10^{+6} \qquad \text{b.} \quad 4 \times 10^{-4} = \underset{+3}{\overbrace{400}^{-3}} \times 10^{-6}$$

$$\text{c.} \quad 50 \times 10^5 = \underset{+2}{\overbrace{5000}^{-2}} \times 10^3 = \underset{-3}{\overbrace{5}^{+3}} \times 10^6 = \underset{-3}{\overbrace{0.005}^{+3}} \times 10^9$$

$$\text{d.} \quad 30 \times 10^{-8} = \underset{-5}{\overbrace{0.0003}^{+5}} \times 10^{-3} = \underset{+3}{\overbrace{0.3}^{-3}} \times 10^{-6} = \underset{+3}{\overbrace{300}^{-3}} \times 10^{-9}$$

$$25. \quad \text{a.} \quad 1.5 \cancel{\text{min}} \left[\frac{60 \text{ s}}{1 \cancel{\text{min}}} \right] = 90 \text{ s} \qquad \text{b.} \quad 0.04 \cancel{\text{h}} \left[\frac{60 \cancel{\text{min}}}{1 \cancel{\text{h}}} \right] \left[\frac{60 \text{ s}}{1 \cancel{\text{min}}} \right] = 144 \text{ s}$$

$$\text{c.} \quad 0.05 \cancel{\text{s}} \left[\frac{1 \mu\text{s}}{10^{-6} \cancel{\text{s}}} \right] = 0.05 \times 10^6 \mu\text{s} = 50 \times 10^3 \mu\text{s}$$

$$\text{d.} \quad 0.16 \cancel{\text{m}} \left[\frac{1 \text{ mm}}{10^{-3} \cancel{\text{m}}} \right] = 0.16 \times 10^3 \text{ mm} = 160 \text{ mm}$$

$$\text{e.} \quad 1.2 \times 10^{-7} \cancel{\text{s}} \left[\frac{1 \text{ ns}}{10^{-9} \cancel{\text{s}}} \right] = 1.2 \times 10^2 \text{ ns} = 120 \text{ ns}$$

$$\text{f.} \quad 3.62 \times 10^6 \cancel{\text{s}} \left[\frac{1 \cancel{\text{min}}}{60 \cancel{\text{s}}} \right] \left[\frac{1 \cancel{\text{h}}}{60 \cancel{\text{min}}} \right] \left[\frac{1 \text{ day}}{24 \cancel{\text{h}}} \right] = 41.898 \text{ days}$$

$$\text{g.} \quad 1020 \cancel{\text{mm}} \left[\frac{10^{-3} \text{ m}}{1 \cancel{\text{mm}}} \right] = 1.02 \text{ m}$$

$$27. \quad \text{a.} \quad 100 \cancel{\text{in.}} \left[\frac{1 \text{ m}}{39.37 \cancel{\text{in.}}} \right] = 2.54 \text{ m} \qquad \text{b.} \quad 4 \cancel{\text{ft}} \left[\frac{12 \cancel{\text{in.}}}{1 \cancel{\text{ft}}} \right] \left[\frac{1 \text{ m}}{39.37 \cancel{\text{in.}}} \right] = 1.219 \text{ m}$$

$$\text{c.} \quad 6 \cancel{\text{lb}} \left[\frac{4.45 \text{ N}}{1 \cancel{\text{lb}}} \right] = 26.7 \text{ N}$$

$$\text{d.} \quad 60 \times 10^3 \cancel{\text{dynes}} \left[\frac{1 \cancel{\text{N}}}{10^5 \cancel{\text{dynes}}} \right] \left[\frac{1 \text{ lb}}{4.45 \cancel{\text{N}}} \right] = 0.1348 \text{ lb}$$

$$\text{e.} \quad 150,000 \cancel{\text{cm}} \left[\frac{1 \cancel{\text{in.}}}{2.54 \cancel{\text{cm}}} \right] \left[\frac{1 \text{ ft}}{12 \cancel{\text{in.}}} \right] = 4921.26 \text{ ft}$$

- f. $0.002 \cancel{\text{mi}} \left[\frac{5280 \cancel{\text{ft}}}{1 \cancel{\text{mi}}} \right] \left[\frac{12 \cancel{\text{in.}}}{1 \cancel{\text{ft}}} \right] \left[\frac{1 \text{ m}}{39.37 \cancel{\text{in.}}} \right] = 3.2187 \text{ m}$
- g. $7800 \cancel{\text{mi}} \left[\frac{39.37 \cancel{\text{in.}}}{1 \cancel{\text{mi}}} \right] \left[\frac{1 \cancel{\text{ft}}}{12 \cancel{\text{in.}}} \right] \left[\frac{1 \text{ yd}}{3 \cancel{\text{ft}}} \right] = 8530.17 \text{ yds}$
29. $299,792,458 \frac{\cancel{\text{mi}}}{\cancel{\text{s}}} \left[\frac{39.37 \cancel{\text{in.}}}{1 \cancel{\text{mi}}} \right] \left[\frac{1 \cancel{\text{ft}}}{12 \cancel{\text{in.}}} \right] \left[\frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \right] \left[\frac{60 \cancel{\text{s}}}{1 \cancel{\text{min}}} \right] \left[\frac{60 \cancel{\text{min}}}{1 \text{ h}} \right]$
 $= 670,615,288.1 \text{ mph} \approx 670.62 \times 10^6 \text{ mph}$
31. $100 \cancel{\text{yds}} \left[\frac{3 \cancel{\text{ft}}}{1 \cancel{\text{yd}}} \right] \left[\frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \right] = 0.0568 \text{ mi}$
 $t = \frac{d}{v} = \frac{0.0568 \cancel{\text{mi}}}{\frac{100 \cancel{\text{mi}}}{\text{h}}} = 0.0568 \times 10^{-2} \cancel{\text{h}} \left[\frac{60 \cancel{\text{min}}}{1 \cancel{\text{h}}} \right] \left[\frac{60 \text{ s}}{1 \cancel{\text{min}}} \right] = 2.045 \text{ s}$
33. $\frac{50 \cancel{\text{mi}}}{\cancel{\text{min}}} \left[\frac{60 \cancel{\text{min}}}{1 \text{ h}} \right] \left[\frac{39.37 \cancel{\text{in.}}}{1 \cancel{\text{mi}}} \right] \left[\frac{1 \cancel{\text{ft}}}{12 \cancel{\text{in.}}} \right] \left[\frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \right] = 1.86 \text{ mi/h}$
 $t = \frac{d}{v} = \frac{3000 \cancel{\text{mi}}}{1.86 \frac{\cancel{\text{mi}}}{\text{h}}} = 1612.9 \text{ h} = 67.2 \text{ days}$
35. $100 \cancel{\text{yds}} \left[\frac{3 \cancel{\text{ft}}}{1 \cancel{\text{yd}}} \right] \left[\frac{12 \text{ in.}}{1 \cancel{\text{ft}}} \right] = 3600 \text{ in.} \Rightarrow 3600 \text{ quarters} = \900
37. $d = vt = \left[600 \frac{\cancel{\text{cm}}}{\cancel{\text{s}}} \right] [0.016 \cancel{\text{h}}] \left[\frac{60 \cancel{\text{min}}}{1 \cancel{\text{h}}} \right] \left[\frac{60 \cancel{\text{s}}}{1 \cancel{\text{min}}} \right] \left[\frac{1 \text{ m}}{100 \cancel{\text{cm}}} \right] = 345.6 \text{ m}$
39. $d = (86 \cancel{\text{stories}}) \left(\frac{14 \text{ ft}}{\cancel{\text{story}}} \right) = 1204 \cancel{\text{ft}} \left[\frac{1 \text{ mile}}{5,280 \cancel{\text{ft}}} \right] = 0.228 \text{ miles}$
 $\frac{\text{min}}{\text{mile}} = \frac{10.7833 \text{ min}}{0.228 \text{ miles}} = 47.30 \text{ min/mile}$
41. a. $5 \cancel{\text{J}} \left[\frac{1 \text{ Btu}}{1054.35 \cancel{\text{J}}} \right] = 4.74 \times 10^{-3} \text{ Btu}$
- b. $24 \cancel{\text{ounces}} \left[\frac{1 \cancel{\text{gallon}}}{128 \cancel{\text{ounces}}} \right] \left[\frac{1 \text{ m}^3}{264.172 \cancel{\text{gallons}}} \right] = 7.098 \times 10^{-4} \text{ m}^3$
- c. $1.4 \cancel{\text{days}} \left[\frac{86,400 \text{ s}}{1 \cancel{\text{day}}} \right] = 1.2096 \times 10^5 \text{ s}$
- d. $1 \cancel{\text{m}^3} \left[\frac{264.172 \cancel{\text{gallons}}}{1 \cancel{\text{m}^3}} \right] \left[\frac{8 \text{ pints}}{1 \cancel{\text{gallon}}} \right] = 2113.38 \text{ pints}$
43. $\boxed{2\text{nd F}} \boxed{\sqrt{}} \boxed{(} \boxed{3} \boxed{x^2} \boxed{+} \boxed{4} \boxed{x^2} \boxed{)} \boxed{\text{ENTER}} \Rightarrow 5.000$
45. $\boxed{2\text{nd F}} \boxed{\sqrt{}} \boxed{(} \boxed{4} \boxed{0} \boxed{0} \boxed{\div} \boxed{(} \boxed{6} \boxed{x^2} \boxed{+} \boxed{1} \boxed{0} \boxed{)} \boxed{)} \boxed{\text{ENTER}} \Rightarrow 2.949$

CHAPTER 1 (Even)

$$4. \quad 50 \frac{\cancel{\text{mi}}}{\cancel{\text{hr}}} \left[\frac{5280 \text{ ft}}{1 \cancel{\text{mi}}} \right] \left[\frac{1 \cancel{\text{hr}}}{60 \text{ min}} \right] = 4400 \text{ ft/min}$$

$$d = vt = \left[\frac{4400 \text{ ft}}{\cancel{\text{min}}} \right] [1 \cancel{\text{min}}] = 4400 \text{ ft}$$

8. MKS

$$10. \quad 1000 \cancel{\text{J}} \left[\frac{0.7378 \text{ ft-lb}}{1 \cancel{\text{J}}} \right] = 737.8 \text{ ft-lbs}$$

$$12. \quad \text{a. } 10^4 \quad \text{b. } 10^{-4} \quad \text{c. } 10^3 \quad \text{d. } 10^6 \quad \text{e. } 10^{-7} \quad \text{f. } 10^{-5}$$

$$14. \quad \text{a. } 4.2 \times 10^3 + 6,800 \times 10^3 = 6,804.2 \times 10^3 = 6.8042 \times 10^6$$

$$\text{b. } 9 \times 10^4 + 0.36 \times 10^4 = 9.36 \times 10^4$$

$$\text{c. } 50 \times 10^{-5} - 6 \times 10^{-5} = 44 \times 10^{-5} = 4.4 \times 10^{-4}$$

$$\text{d. } 1.2 \times 10^3 + 0.05 \times 10^3 - 0.6 \times 10^3 = 0.65 \times 10^3 = 6.5 \times 10^2$$

$$16. \quad \text{a. } (50 \times 10^3)(3 \times 10^{-4}) = 150 \times 10^{-1} = 1.5 \times 10^1$$

$$\text{b. } (2.2 \times 10^3)(8 \times 10^{-2}) = 17.6 \times 10^1 = 1.76 \times 10^2$$

$$\text{c. } (82 \times 10^{-6})(7 \times 10^{-5}) = 574 \times 10^{-11} = 5.74 \times 10^{-9}$$

$$\text{d. } (30 \times 10^{-4})(2 \times 10^{-4})(7 \times 10^8) = 420 \times 10^0 = 4.2 \times 10^2$$

$$18. \quad \text{a. } \frac{2 \times 10^3}{8 \times 10^{-5}} = 0.25 \times 10^8 = 2.5 \times 10^7$$

$$\text{b. } \frac{4.08 \times 10^{-3}}{60 \times 10^3} = 0.068 \times 10^{-6} = 6.8 \times 10^{-8}$$

$$\text{c. } \frac{2.15 \times 10^{-4}}{5 \times 10^{-5}} = 0.43 \times 10^1 = 4.3 \times 10^0$$

$$\text{d. } \frac{78 \times 10^9}{4 \times 10^{-6}} = 19.5 \times 10^{15} = 1.95 \times 10^{16}$$

$$20. \quad \text{a. } (2.2 \times 10^3)^3 = (2.2)^3 \times (10^3)^3 = 10.65 \times 10^9 = 1.065 \times 10^{10}$$

$$\text{b. } (6 \times 10^{-4} \times 10^2)^4 = (6 \times 10^{-2})^4 = (6)^4 \times (10^{-2})^4 = 1296 \times 10^{-8} = 1.296 \times 10^{-5}$$

$$\text{c. } (4 \times 10^{-3} \times 6 \times 10^2)^2 = (24 \times 10^{-1})^2 = (2.4)^2 = 5.76$$

$$\begin{aligned} \text{d. } ((2 \times 10^{-3})(0.8 \times 10^4)(0.003 \times 10^5))^3 &= (4.8 \times 10^3)^3 = (4.8)^3 \times 10^9 \\ &= 110.6 \times 10^9 = 1.106 \times 10^{11} \end{aligned}$$

$$22. \text{ a. } \frac{(3 \times 10^2)^2(10^2)}{10^4} = \frac{(9 \times 10^4)(10^2)}{10^4} = \frac{9 \times 10^6}{10^4} = 9 \times 10^2 = 900$$

$$\text{b. } \frac{(4 \times 10^4)^2}{(20)^3} = \frac{16 \times 10^8}{8 \times 10^3} = 9 \times 10^{12}$$

$$\text{c. } \frac{(6 \times 10^4)^2}{(2 \times 10^{-2})^2} = \frac{36 \times 10^8}{4 \times 10^{-4}} = 9 \times 10^{12}$$

$$\text{d. } \frac{(27 \times 10^{-6})^{1/3}}{21 \times 10^4} = \frac{3 \times 10^{-2}}{21 \times 10^4} = \frac{1}{7} \times 10^{-6}$$

$$\text{e. } \frac{[(4 \times 10^3)^2][300]}{2 \times 10^{-2}} = \frac{(16 \times 10^6)(3 \times 10^2)}{2 \times 10^{-2}} = \frac{48 \times 10^8}{2 \times 10^{-2}} = 24 \times 10^{10} = 240 \times 10^9$$

$$\text{f. } (16 \times 10^{-6})^{1/2}(10^5)^5(2 \times 10^{-2}) = (4 \times 10^{-3})(10^{25})(2 \times 10^{-2}) = 8 \times 10^{20} \\ = 800 \times 10^{18}$$

$$\begin{aligned} \text{g. } \frac{[(3 \times 10^{-3})^3][7 \times 10^{-5}]^2[8 \times 10^2]^2}{[(10^2)(9 \times 10^{-4})]^{1/2}} &= \frac{(27 \times 10^{-9})(49 \times 10^{-10})(64 \times 10^4)}{(9 \times 10^{-2})^{1/2}} \\ &= \frac{84,672 \times 10^{-15}}{3 \times 10^{-1}} \\ &= 28,224 \times 10^{-14} = 282.24 \times 10^{-12} \end{aligned}$$

$$24. \text{ a. } 2000 \times 10^{-6} \text{ s} \xrightarrow{\text{increase by (3)}} \underline{2.0} \times 10^{-3} \text{ s} = 2 \text{ ms}$$

$$\text{b. } 0.04 \times 10^{-3} \text{ s} \xrightarrow{\text{decrease by (3)}} \underline{40} \times 10^{-6} \text{ s} = 40 \text{ } \mu\text{s}$$

$$\text{c. } 0.06 \times 10^{-6} \text{ F} \xrightarrow{\text{decrease by (3)}} \underline{60} \times 10^{-9} \text{ F} = 60 \text{ nF}$$

$$\text{d. } 8400 \times 10^{-12} \text{ s} \xrightarrow{\text{increase by (6)}} \underline{0.0084} \times 10^{-6} \text{ s} = 0.0084 \text{ } \mu\text{s}$$

- e. $0.006 \times 10^3 \text{ m} = \overset{\text{decrease by (6)}}{\underline{6000}} \times 10^{-3} \text{ m} = 6000 \text{ m}$
- f. $260 \times \overset{10^0}{\overbrace{10^3 \times 10^{-3}}} \text{ m} \Rightarrow \overset{\text{increase by (3)}}{\underline{0.26}} \times 10^3 \text{ m} = 0.26 \text{ km}$
26. a. $0.1 \cancel{\mu\text{F}} \left[\frac{10^{-6} \cancel{\text{F}}}{1 \cancel{\mu\text{F}}} \right] \left[\frac{1 \text{ pF}}{10^{-12} \cancel{\text{F}}} \right] = 0.1 \times 10^{-6} \times 10^{12} \text{ pF} = 10^5 \text{ pF}$
- b. $0.467 \cancel{\text{km}} \left[\frac{10^3 \text{ m}}{1 \cancel{\text{km}}} \right] = 467 \text{ m}$
- c. $63.9 \times 10^{-3} \cancel{\text{m}} \left[\frac{100 \text{ cm}}{1 \cancel{\text{m}}} \right] = 63.9 \times 10^{-1} \text{ cm} = 6.39 \text{ cm}$
- d. $69 \cancel{\text{cm}} \left[\frac{1 \cancel{\text{m}}}{100 \cancel{\text{cm}}} \right] \left[\frac{1 \text{ km}}{1000 \cancel{\text{m}}} \right] = 69 \times 10^{-5} \text{ km}$
- e. $3.2 \cancel{\text{h}} \left[\frac{60 \cancel{\text{min}}}{1 \cancel{\text{h}}} \right] \left[\frac{60 \cancel{\text{s}}}{1 \cancel{\text{min}}} \right] \left[\frac{1 \text{ ms}}{10^{-3} \cancel{\text{s}}} \right] = 11.52 \times 10^6 \text{ ms}$
- f. $0.016 \cancel{\text{mm}} \left[\frac{10^{-3} \cancel{\text{m}}}{1 \cancel{\text{mm}}} \right] \left[\frac{1 \mu\text{m}}{10^{-6} \cancel{\text{m}}} \right] = 0.016 \times 10^3 \mu\text{m} = 16 \mu\text{m}$
- g. $60 \text{ cm}^2 = 60(\cancel{\text{cm}})(\cancel{\text{cm}}) \left[\frac{1 \text{ m}}{100 \cancel{\text{cm}}} \right] \left[\frac{1 \text{ m}}{100 \cancel{\text{cm}}} \right] = 60 \times 10^{-4} \text{ m}^2$
28. $5280 \text{ ft}, 5280 \cancel{\text{ft}} \left[\frac{1 \text{ yd}}{3 \cancel{\text{ft}}} \right] = 1760 \text{ yds}$
- $5280 \cancel{\text{ft}} \left[\frac{12 \cancel{\text{in.}}}{1 \cancel{\text{ft}}} \right] \left[\frac{1 \text{ m}}{39.37 \cancel{\text{in.}}} \right] = 1609.35 \text{ m}, 1.61 \text{ km}$
30. $\frac{50 \cancel{\text{ft}}}{20 \cancel{\text{s}}} \left[\frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \right] \left[\frac{60 \cancel{\text{s}}}{1 \cancel{\text{min}}} \right] \left[\frac{60 \cancel{\text{min}}}{1 \text{ h}} \right] = 1.7 \text{ mph}$
32. $\frac{6 \cancel{\text{mi}}}{\cancel{\text{h}}} \left[\frac{5280 \cancel{\text{ft}}}{1 \cancel{\text{mi}}} \right] \left[\frac{12 \cancel{\text{in.}}}{1 \cancel{\text{ft}}} \right] \left[\frac{1 \text{ m}}{39.37 \cancel{\text{in.}}} \right] \left[\frac{1 \cancel{\text{h}}}{60 \cancel{\text{min}}} \right] \left[\frac{1 \cancel{\text{min}}}{60 \text{ s}} \right] = 2.682 \text{ m/s}$

$$34. \quad 10 \cancel{\text{km}} \left[\frac{1000 \cancel{\text{m}}}{1 \cancel{\text{km}}} \right] \left[\frac{39.37 \cancel{\text{in.}}}{1 \cancel{\text{m}}} \right] \left[\frac{1 \cancel{\text{ft}}}{12 \cancel{\text{in.}}} \right] \left[\frac{1 \text{ mi}}{5280 \cancel{\text{ft}}} \right] = 6.214 \text{ mi}$$

$$v = \frac{1 \text{ mi}}{6.5 \text{ min}}, t = \frac{d}{v} = \frac{6.214 \cancel{\text{mi}}}{\frac{1 \cancel{\text{mi}}}{6.5 \text{ min}}} = 40.39 \text{ min}$$

$$36. \quad 55 \text{ mph: } t = \frac{d}{v} = \frac{3000 \cancel{\text{mi}}}{\frac{55 \cancel{\text{mi}}}{\text{h}}} = 54.55 \text{ h}$$

$$65 \text{ mph: } t = \frac{d}{v} = \frac{3000 \cancel{\text{mi}}}{\frac{65 \cancel{\text{mi}}}{\text{h}}} = 46.15 \text{ h}$$

$$38. \quad d = 86 \cancel{\text{stories}} \left[\frac{14 \cancel{\text{ft}}}{\cancel{\text{story}}} \right] \left[\frac{1 \text{ step}}{\frac{9}{12} \cancel{\text{ft}}} \right] = 1605 \text{ steps}$$

$$v = \frac{d}{t} \Rightarrow t = \frac{d}{v} = \frac{1605 \text{ steps}}{\frac{2 \text{ steps}}{\text{second}}} = 802.5 \cancel{\text{seconds}} \left[\frac{1 \text{ minute}}{60 \cancel{\text{seconds}}} \right] = 13.38 \text{ minutes}$$

$$40. \quad \frac{5 \text{ min}}{\text{mile}} \Rightarrow \frac{1 \cancel{\text{mile}}}{5 \text{ min}} \left[\frac{5,280 \text{ ft}}{1 \cancel{\text{mile}}} \right] = \frac{1056 \text{ ft}}{\text{minute}}, \text{ distance} = 86 \cancel{\text{stories}} \left[\frac{14 \cancel{\text{ft}}}{\cancel{\text{story}}} \right] = 1204 \text{ ft}$$

$$v = \frac{d}{t} \Rightarrow t = \frac{d}{v} = \frac{1204 \text{ ft}}{1056 \frac{\text{ft}}{\text{min}}} = 1.14 \text{ minutes}$$

$$42. \quad \boxed{6} \boxed{\times} \boxed{(} \boxed{4} \boxed{+} \boxed{8} \boxed{)} \boxed{\text{ENTER}} \Rightarrow 72.000$$

$$44. \quad \boxed{2\text{nd}} \boxed{\tan^{-1}} \boxed{(} \boxed{4} \boxed{\div} \boxed{3} \boxed{)} \boxed{\text{ENTER}} \Rightarrow 53.13$$